bility data. A substantial decrease in visibility was noted for the last days in April and beginning of May. This decrease coincided with heavy rainfall events (Figure 8) in the local area below the reservoir, and resulted in increased input of sediment-laden waters into the Roanoke River (which at the time was experiencing flows of 5,000 to 6,000 cfs, Figure 10). Several days later when water release was increased from Roanoke Rapids Reservoir in response to heavy inflow upstream, waters flowing past Barnhill's Landing actually increased in surface visibility as the river stage changed a dramatic 15 feet (Figure 13). A similar drop in water clarity occurred in early June, when river flow was about 4,000 cfs (Figure 11).

Conductivity of Roanoke River waters flowing past Barnhill's Landing was low throughout the study, usually varying between 70 and 100 μS (Figure 14). However, a dip in conductivity readings to 40 μS was evident at the end of April during the low flow period just prior to the major water release event from Roanoke Rapids Reservoir.

Patterns of egg distribution in samples compared to sampling time reflected the time of travel downstream from the spawning grounds. For the entire spawning season, egg collection was lowest at 1400 and 1800 hours. At 2200 hours, the number of eggs in nets increased with peak occurrence at 0600 and 1000 hours (Table 6). In 1989 some spawning was observed at Barnhill's Landing on several occasions. However, most recreational fishing activity was concentrated between Halifax and Weldon during the period of peak spawning activity. Predicting the actual site of major spawning activity is difficult. Over 75% of the eggs were less than 10 hours old (based on development at 17°C) and caught in surface water velocities of 100-120 cm/second. Assuming an average water velocity of 100 cm/second (3.28 ft./second), major spawning activity could have occurred anywhere between 2 and 20 river miles (at the dam) upstream of Barnhill's Landing.

Levels of dissolved oxygen in Roanoke River waters remained above 7.0 mg/L throughout the study, but a general decrease was evident between April and June (Figure 15). Less than one percent of striped bass eggs were collected in waters containing dissolved oxygen levels less than 7.0 or greater than 8.9 mg/L (Table 7).

Acidity of the waters passing Barnhill's Landing ranged from 6.5 to 8.8 but remained above 7.0 throughout much of the study (Figure 16). A noticeable drop in pH was recorded late April and early May concurrent with low flows of the Roanoke River and high inflow from locally heavy rainfall. Approximately 90% of striped bass eggs were collected in waters with pH values of 7.50 or greater (Table 8). Greatest viability was observed at pH values ranging from 6.75 to 7.24; the total numbers of eggs collected in this range are too few to determine statistical significance of the trend.

Vertical Heterogeneity

During each sampling trip, paired-net egg samples were taken both at the surface and in an oblique manner for five-minute periods so that potential bias in the vertical distribution of eggs could be quantified. Egg production for each trip was calculated by using the ratio of the opening of the egg net to the estimated cross-sectional area of the river multiplied by the average number of eggs caught in either the surface nets or in the oblique nets during the five-minute tow.

A total of 9,829 eggs was collected in all nets. Surface net A collected 2,336 eggs (n= 344; mean = 6.81; S.D. = 23.57) and surface net B collected 2,553 eggs (n = 344; mean = 6.96; S.D. = 22.17). An analysis of variance of the paired net count (raw) data revealed that the surface egg data were skewed and not normally distributed. A signed rank test on natural log transformed data showed that the difference of egg counts between surface nets was significantly different